UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,987	11/02/2001	Richard W. Busser	4430-34	5846

7590 01/13/2006

David F. Zinger
SHERIDAN ROSS P.C.
Suite 1200
1560 Broadway
Denver, CO 80202-5141

EXAMINER	
TRAN, PHILIP B	

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/008,987	BUSSER ET AL.	
	Examiner	Art Unit	
	Philip B. Tran	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/31/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendments

1. This communication is in response to the amendment filed 13 October 2005. Claims 1-2, 6-7, 9-13 and 15-16 have been amended. Therefore, claims 1-20 are pending for further examination.

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 10-17 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Mokryn et al (Hereafter, Mokryn), U.S. Pat. No. 6,735,636.

Regarding claim 10, Mokryn teaches a method for mirroring using two controllers in a storage system, comprising making a determination related to contents of a first

message with a first controller, wherein said message is to be sent by said first controller to a second controller as part of a first mirroring operation; and producing said first message having contents that depends on said making step wherein, when said making step determines that data to be sent is less than or equal to a predetermined number of bits, said first message includes metadata and when said making step determines that said data is greater than said predetermined number of bits, at least less than all of said metadata associated with said first mirroring operation is not included with said first message (= mirroring data operation using two controllers in a storage system wherein replied message indicating the size of data) [see Abstract and Col. 2, Lines 10-67 and Col. 6, Lines 22-67 and Col. 10, Line 66 to Col. 11, Line 40].

Regarding claim 11, Mokryn further teaches a method, as claimed in claim 10, further comprising sending said first message to said second controller and recognizing said message by said second controller including whether said first message includes said metadata [see Col. 6, Lines 22-67].

Regarding claim 12, Mokryn further teaches a method, as claimed in claim 10, wherein said first message is the first message sent by said first controller to said second controller as part of said first mirroring operation [see Col. 3, Line 17 to Col. 5, Line 17].

Regarding claim 13, Mokryn further teaches a method, as claimed in claim 10, wherein said first message causes a first interrupt to said second controller when said first message includes said metadata, with said first interrupt being one of three interrupts and said three interrupts being the minimum number of interrupts for said first mirroring operation [see Col. 9, Lines 6-67].

Regarding claim 14, Mokryn further teaches a method, as claimed in claim 10, wherein said first controller communicates with said second controller for said first mirroring operation using Small Computer System Interface (SCSI) protocol and said predetermined number of bits depends on SCSI protocol operations [see Col. 14, Lines 36-51 and Col. 15, Lines 51-67].

Claim 15 is rejected under the same rationale set forth above to claim 10.

Regarding claim 16, Mokryn further teaches an apparatus, as claimed in claim 15, wherein said first message includes all metadata for said first mirroring operation and said second message includes at least less than all of said metadata for said first mirroring operation and in which said one of said first message and said second message is the first communication from said first controller to said second controller for said first mirroring operation [see Col. 3, Line 17 to Col. 5, Line 17 and Col. 6, Lines 22-67].

Claim 17 is rejected under the same rationale set forth above to claim 14.

Regarding claim 19-20, Mokryn further teaches an apparatus, as claimed in claim 15, wherein when said second message is generated, metadata is sent to said second controller after an interrupt that is different from the interrupt associated with said second message and wherein when said first message is generated, said first mirroring operation is associated with a first number of interrupts and, when said second message is sent, said first mirroring operation is associated with a second number of interrupts, with said second number of interrupts being greater than said first number of interrupts [see Col. 9, Lines 6-67].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-9 and 18 are rejected under 35 U.S.C 103(a) as being unpatentable over Mokryn et al (Hereafter, Mokryn), U.S. Pat. No. 6,735,636 in view of Skazinski et al (Hereafter, Skazinski), U.S. Pat. No. 6,574,709.

Regarding claim 1, Mokryn teaches a method for mirroring data using two controllers in a storage system, comprising providing a first message comprising a write mirror message that includes metadata by a first controller to a second controller and in which said first message including said metadata, with said first message being part of a first mirroring operation, and continuing with said first mirroring operation after said providing step a first message by providing a second message comprising a data mirror message that includes user data, wherein no messages other than said first and second messages are provided by said first controller to said second controller as part of said first mirroring operation (= writing and mirroring data operation using two controllers in a storage system) [see Abstract and Col. 2, Lines 7-67 and Col. 6, Lines 22-67 and Col. 10, Line 66 to Col. 11, Line 40].

Mokryn does not explicitly teach metadata size is not greater than 128 bits. However, Skazinski, in the same field of data mirroring endeavor, discloses data mirror map is typically comprised of 128 bits [see Skazinski, Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was

made to incorporate the teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Regarding claims 2-3, Mokryn does not explicitly teach a method, as claimed in claim 1, wherein said providing step includes determining that data associated with said first mirroring operation is not greater than a predetermined number of bytes and ascertaining by said first controller that said data associated with said first mirroring operation is no greater than 32 Kbytes. However, Skazinski, in the same field of data mirroring endeavor, discloses data mirror map size as a predetermined number of bytes [see Skazinski, Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Regarding claim 4, Mokryn further teaches a method, as claimed in claim 2, wherein said first controller communicates with a second controller using a Small Computer System Interface (SCSI) protocol and in which said predetermined number of bits in said message relates to said Small Computer System Interface (SCSI) protocol [see Col. 14, Lines 36-51 and Col. 15, Lines 51-67].

Regarding claims 5-6, Mokryn further teaches a method, as claimed in claim 2, wherein said continuing step includes sending said second controller a second

message that includes said data and wherein said continuing step includes sending a write complete message related to completion of said first mirroring operation [see Col. 6, Lines 5-21 and Col. 13, Lines 3-13].

Regarding claim 7, Mokryn further teaches a method, as claimed in claim 1, further comprising: determining that second data associated with a second mirroring operation has a greater number of bits than a predetermined number of bits and sending a second message to said second controller that does not include metadata [see Col. 3, Line 17 to Col. 5, Line 17 and Col. 17, Lines 17-27].

Regarding claim 8, Mokryn further teaches a method, as claimed in claim 1, wherein said message is the first message sent by said first controller to said second controller for said first mirroring operation [see Col. 6, Lines 5-21 and Col. 13, Lines 3-13 and Col. 16, Line 63 to Col. 17, Line 62].

Regarding claim 9, Mokryn further teaches a method, as claimed in claim 1, wherein said message causes a first interrupt to said second controller and the minimum number of interrupts to said second controller for said first mirroring operation is three interrupts [see Col. 9, Lines 6-67].

Regarding claim 18, Morkryn does not explicitly teach an apparatus, as claimed in claim 15, wherein said first message includes metadata and command related

information and said first message is no greater than 128 bits. However, Skazinski, in the same field of data mirroring endeavor, discloses data mirror map is typically comprised of 128 bits [see Skazinski, Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Response to Arguments

6. Applicant's arguments with respect to claims 1-20 have been considered but are not persuasive because of the following reasons:

Mokryn teaches a device, system and method of data management facilitate the implementation of improved mirroring, back-up, volume remapping and extent relocation, among others. Mokryn further teaches the hosts are coupling with an intelligent I/O stream splitter that is connected to the control units. In addition, Mokryn further discloses that the splitter may intercept and alter an I/O stream from a communications link. In the case of mirroring, the intelligent splitter may intercept write commands and associated data from a mainframe that target a specific storage location on a specific control unit and then transmit the intercepted I/O stream to the target control unit and storage location. Though there is a splitter involved, the control units communicate to each other via connection to the splitter. With regarding to mirroring example, one or more channel command words (CCWs) may be used to perform reads from the primary control unit and writes to the mirroring control unit to synchronize their relevant state before mirroring session definition is invoked. In summary, Mokryn

teaches writing and mirroring data operation using two controllers in a storage system wherein replied message indicating the size of data [see Abstract and Col. 2, Lines 7-67 and Col. 6, Lines 22-67 and Col. 10, Line 66 to Col. 11, Line 40].

Moreover, Mokryn further teaches flow control technique for determining the size of transmitted data [see Col. 2, Lines 7-67 and Col. 13, Line 66 to Col. 14, Line 5]. This suggests that data to be sent is less than or equal to a predetermined number of bits.

Therefore, the examiner asserts that cited references teach or suggest the subject matter broadly recited in independent claims. Dependent claims are also rejected at least by virtue of their dependency on independent claims. Accordingly, claims 1-20 are respectfully rejected as shown above.

Other References Cited

7. The following references cited by the examiner but not relied upon are considered pertinent to applicant's disclosure.

A) Yanai et al, U.S. Pat. No. 5,742,792.

B) Vishlitzky et al, U.S. Pat. No. 5,987,566.

C) Wilson, U.S. Pat. No. 6,718,347.

D) Meiri et al, U.S. Pat. Application Pub. No. US 2002/0097687 A1.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CAR 1.136(a).

A SHORTENED STATUTORY PERIOD FOR REPLY TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE MAILING DATE OF THIS ACTION. IN THE EVENT A FIRST REPLY IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CAR 1.136(A) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT, HOWEVER, WILL THE STATUTORY PERIOD FOR REPLY EXPIRE LATER THAN SIX MONTHS FROM THE MAILING DATE OF THIS FINAL ACTION.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Tran whose telephone number is (571) 272-3991. The Group fax phone number is (571) 273-8300. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar, can be reached on (571) 272-4006.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Philip Tran

Philip B. Tran
Primary Examiner
Art Unit 2155
Jan 07, 2006